CLAIMS

1. A set of nano-objects (4, 10, 12, 22, 24), particularly atomic threads, single dimensional nano-structures and quantum dots, this set being characterised in that the nano-objects are made of a metal and are formed on the surface (2, 6, 14) of a substrate made of a monocrystalline semiconducting material.

2. A set of nano-objects according to claim 1, in which the monocrystalline semiconducting material is chosen from among monocrystalline silicon carbide, monocrystalline diamond, covalent monocrystalline semiconductors, and composite monocrystalline semiconductors.

3. A set of nano-objects according to claim 2, in which the substrate is a monocrystalline substrate of silicon carbide in the cubic phase.

4. A set of nano-objects according to claim 3, in which the surface (2) is a cubic silicon carbide surface, rich in β-SiC (100) 3x2 silicon.

5. A set of nano-objects according to claim 1, in which the nano-objects are three-dimensional clusters (4) of the metal on the surface.

6. A set of nano-objects according to claim 5, in which the clusters are distributed in an orderly manner on the surface and thus form a lattice of metal dots.

7. A set of nano-objects according to claim 3, in which the surface (6, 14) is a cubic silicon carbide surface which is Si terminated, β-SiC(100) c(4x2), and the nano-objects are parallel atomic threads (10, 22) or parallel single-dimensional nanometric strips (12, 24) of the metal.

8. A set of nano-objects according to claim 7, in which the surface (6, 14) comprises parallel atomic threads (8, 20) of Si, the atomic threads and single dimensional strips of the metal being perpendicular to these atomic threads of Si.

9. A set of nano-objects according to claim 1, in which the surface comprises passivated areas (15) and non-passivated areas (16, 18) and the nano-objects are formed on these non-passivated areas of the surface.

10. A set of nano-objects according to claim 1, in which the metal is chosen from among metals for which the d band is full, jellium type metals, alkaline metals and transition metals.

11. A set of nano-objects according to claim 10, in which the metal is chosen from among sodium and potassium.

12. Process for making a set of nano-objects, in which a surface (2, 6, 14) of a substrate made of a monocrystalline semiconducting material is prepared, and a metal is deposited on the surface thus prepared.

13. Process according to claim 12, in which the monocrystalline semiconducting material is chosen from among monocrystalline silicon carbide, monocrystalline diamond, covalent monocrystalline semiconductors and monocrystalline composite semiconductors.

14. Process according to claim 13, in which the substrate is a monocrystalline substrate of silicon carbide in the cubic phase.

15. Process according to claim 12, in which the metal is deposited at a temperature greater than or equal to room temperature.

16. Process according to claim 14, in which a surface (2) of cubic silicon carbide rich in silicon β-SiC(100) 3x2 is prepared, and the metal is deposited on the surface thus prepared.

17. Process according to claim 14, in which a silicon carbide surface (6,14) which is Si terminated β-SiC(100) c(4x2) is prepared, the metal is deposited at room temperature on the surface thus prepared and, by surface migration of metal atoms along lines of Si-Si dimers of the surface c(4x2), atomic threads of the metal are obtained that are parallel to the lines of Si-Si dimers.

18. Process according to claim 17, in which a thermal annealing of the substrate is carried out at a temperature below the total desorption temperature of the metal.

19. Process according to claim 12, in which the metal is deposited by vacuum evaporation.

20. Process according to claim 12, in which the metal is deposited in an inert atmosphere.

21. Process according to claim 12, in which passivated areas (15) are formed on the thus prepared surface and the metal is then deposited on non-passivated areas (16, 18) of this surface.

22. Process according to claim 12, in which the metal is chosen from among metals for which the d band is full, jellium type metals, alkaline metals and transition metals.

23. Process according to claim 22, in which the metal is chosen from among sodium and potassium.

24. Process according to claim 17, in which a laser is used to obtain desorption of the metal either by thermal interaction of the beam emitted by this laser over the surface covered with metal, or by desorption of the metal induced by electronic transitions.

25. Process according to claim 14, in which the surface is an sp type C terminated surface, namely the β-SiC(100) c(2x2) surface.

26. Process according to claim 25, in which this surface comprises atomic lines of sp3 type C and atomic threads of metal are formed that are either parallel or perpendicular to the atomic lines of C.

27. Process according to claim 12, in which a lattice of metal dots is formed on the surface of the substrate made of monocrystalline semiconducting material, the substrate material located under the dots is locally transformed and the lattice of dots is eliminated thus to obtain a super-lattice of dots made of the transformed material.

28. Process according to claim 27, in which the local transformation of the substrate material is chosen from among oxidation, nitridation and oxynitridation to obtain a super-lattice of dots made of the oxide, nitride or oxynitride of the material.

29. Super-lattice of dots, obtained using the process according to claim 28, these dots being made of the oxide, nitride or oxynitride of a monocrystalline semiconducting material and formed at the surface of a substrate of this material.